

VII.—Contributions to a Flora of Borneo.

—By HENRY N. RIDLEY, F.R.S.

(RANUNCULACEÆ TO ANONACEÆ.)

IN several numbers of the 'Journal of the Straits Branch of the Royal Asiatic Society' and elsewhere I have from time to time published lists of plants belonging to certain orders occurring in Borneo; such have been the *Orchids*, *Aroids*, and *Scitamineæ* of this country. I hope to continue this work as occasion may permit, as I believe it will prove useful to those who are engaged in the study of botany in that island.

Considering the great size of Borneo, and the interesting character of its flora, it is surprising how few are the collections that have been made therein, and how little it has been botanically explored. The regions which have been most carefully investigated are all under the rule of the British, and even in Dutch territory, the largest part of the island, English collectors have played a prominent part. In Sarawak the most valuable collections have been made by Dr. Haviland and Dr. Beccari. We have also plants obtained there by Charles Hose, Bishop Hose, Messrs. Hewitt, Moulton, C. J. Brooks, Shelford, Hullett, Bartlett, and myself. The flora of this region is therefore better known than any other. In British North Borneo Governor Creagh obtained a good series of plants, now at Kew, and Fraser also obtained many specimens; while the big mountain Kinabalu has been explored by Haviland, Lowe, and Miss Gibbs; Burbidge also collected a good many plants on his expedition for Messrs. Veitch. Labuan was visited in its early days by Barber and Motley, before the disastrous fire destroyed so much of its flora. Of the remainder of the island we only know the flora of the south-east round Martapura and Banjermasin, collected by Korthals and Motley, and of the west the small collections made about Pontianak by Teysmann. The great area of Central Dutch Borneo is only known from the plants collected by Jaheri in the Niessivenkins expedition. The collections of nearly all these botanists, excepting the last, are partly or fully preserved

at the British Museum and Kew herbaria. The flora is a very rich one, and very much remains to be done even in the best known district. Phytogeographically it appears to be closely related to the floras of the Malay Peninsula and Sumatra, and more distinct from that of Java and the islands further east.

RANUNCULACEÆ.

Ranunculus Lowii, Stapf, Ic. Pl. 2261.

British North Borneo : Mt. Kinabalu (Lowe, Haviland).
Endemic.

Clematis smilacifolia, Wall. As. Res. xiii. 414.

Sarawak : Mt. Start, at 1500 feet (Haviland, 1501);
British North Borneo : Port Myburgh (Creagh), Kudat (Fraser).

Distrib. Indo-Malaya.

Naravelia laurifolia, Wall. Cat. 4685.

Borneo : no locality given (Teysmann).

Distrib. Indo-Malaya.

Naravelia dasyoneura, Korthals Ned. Kruidk. Arch. i. 208.

S.E. Borneo : Tungan Mt. and Banju Wiran in Martapura (Korthals).

DILLENIACEÆ.

Delima sarmentosa, Linn. (DC. Prodr. i. 69).

British North Borneo : Tawan (Creagh).

S.E. Borneo : Banjarmasin (Motley).

Distrib. Indo-Malaya.

Tetracera glaberrima, Martelli, Malesia iii. 150.

Sarawak : Kuching (Beccari).

This is very closely allied to *T. sylvestris*, Ridl., but is quite glabrous.

Endemic.

Tetracera sylvestris, Ridl., Journ. Roy. As. Soc. S. br. 54
(1909) p. 8.

S.E. Borneo : Banjarmasin (Motley, 813).

Distrib. Singapore, Malacca, and Perak.

Tetracera axillaris, Martelli, Malesia iii. 151.

Sarawak : Gunong Wak, and Quop (Beccari, 2844).

Endemic.

Tetracera borneensis, Miq., *l. c.*, 76.

Sarawak : At Salak Island (Beccari, 2981).

W. Borneo : Pontianak (Beccari, 153).

S.E. Borneo : Pulan Lampei (Korthals) !

Very near *T. fagifolia*, Bl., of Malaya, differing in the presence of abundant gland-like bodies on the leaf back.

Distrib. Philippines.

Tetracera lævigata, Miq., Fl. Ind. Bot. i. 2, 8.

Sarawak : Kuching (Haviland, 2247, 1739).

S.E. Borneo : Martapura (Korthals) !

In spite of its name this is an unusually hairy species.

Distrib. Malay Archipelago.

Tetracera radula, Martelli, *l. c.*, 153.

W. Borneo : Pontianak at Sungei Kautu (Beccari, non visi).

Endemic.

Tetracera Havilandii, n. sp.

A climber. Leaves obovate, rounded or emarginate at the tip, cuneate at the base, running down to the petiole ; coriaceous 4 in. long, $2\frac{1}{2}$ in. wide ; stiffly scabrid, hairy on the petiole edge, midrib sunk above, hairy with appressed hairs, petiole flat. Panicles small, branches covered with stellately arranged hairs. Sepals in fruit, subequal ovate, shagreened 1 cm. long, margins ciliate. Carpels 3 1.2 cm. long, ovate apiculate shining.

Sarawak : Kuching, October 8, 1892 (Haviland, 1811).

The only specimen I have seen is rather a poor one in fruit. The species is nearest to *T. axillaris*, Martelli, but it is not silky hairy, and the leaves are different in form. From *T. radula*, Martelli, it differs in its equal sepals, glabrous except along the edge.

Tetracera scabri caulis, n. sp.

Stem fairly stout, woody climbing ; at first scabrid, with short stiff hairs, then simply scabrid. Leaves oblong, obtuse base rounded, apex blunt, margins undulate between the nerve-tips, stiffly coriaceous, above and beneath scabrid, nerves seven pairs, elevate beneath ; midrib depressed, above hairy ; young leaves hairy above, with scattered stiff pale hairs 10 cm. long and 4 cm. wide ; petiole scabrid, flattened black, 5-6 mm. long. Panicles 10-14 cm. long, its lower half nude ; branches, few, short ;

scabrid hairy, rachis with short hairs in tufts. Flowers numerous. Bracts oblong, 5 mm. long; obtuse, longer than the pedicels, hairy outside, edges thickly ciliate. Outer sepals ovate, orbicular rounded, inner ones more oblong; silky pubescent, edges ciliate; centre inside silky, 5 mm. long, 3 mm. wide. Petals thin, glabrous, a little longer. Stamens rather short; apices sub-obtriangular, often inæquilateral; styles and carpels 3.

British North Borneo: Sandakan (Creagh).

A very rough scabrid plant, perhaps nearest to *T. radula*, Martelli.

Tetracera Korthalsi, Miq., Fl. Ind. Bat. i. 2, 8.

S.E. Borneo: Sakumbang, at Tewe river (Korthals); not seen.

Endemic.

Tetracera lævis, Vahl, Symb. Bot. iii. 71.

Miquel (Ann. Mus. Lugd. Bat., l. c., 74) gives this as collected at Mt. Pamatton, in Pulan Lampei, by Korthals, and in West Borneo by De Vriese.

As the species is only otherwise known from Ceylon and Southern India, it is probable that this is a mis-identification.

Didesmandra aspera, Stapf, Ic. Pl. 2646.

Sarawak: Rejang Belaga (Haviland, 2324).

Endemic.

Dillenia indica, L., Sp. Pl. 535.

Sarawak, along the south branch of the river (Beccari); Bidi (Ridley).

S.E. Borneo: Banjermasin, Tewe river (Korthals).

Distrib. Indo-Malaya.

Dillenia aurea, Sm., Ex. Bot. 93, t. 92.

Sarawak, at Kuching. Two leaves and two flowers only picked up by Beccari, fallen from a "big tree." Identified by Martelli. Doubtful on account of the insufficiency of material and the description a "big tree," as *D. aurea* is not usually large.

Recorded from S.E. Borneo by Korthals.

Dillenia crassisepala, Martelli Malesia, l. c.

Sarawak, on Mt. Matang (Beccari, 2554); two miles from Kuching (Haviland, 1517).

Genus doubtful. It may be a *Wormia*, but the fruit is not known.

Dillenia eximia, Miq., Fl. Ind. Bat. Suppl. 620.

S.E. Borneo : Pamatton (Korthals).

Distrib. Sumatra.

Wormia (§ *Alatæ*) *subsessilis*, Miq., Fl. Ind. Bat. Suppl. i. 618. *W. Burbridgei*, Hook. fil., Bot. Mag. t. 6531.

Labuan (Ridley, Burbridge).

British North Borneo : Sandakan (Ridley, Creagh).

Distrib. Malay Peninsula, Bangka, and Borneo.

I make the section *Alatæ* for the species of *Wormia* which have the petiole winged and enclosing the bud.

Wormia suffruticosa var. *borneensis*. *W. subsessilis* var. *borneensis*, Ridl., Journ. Straits Branch Roy. As. Soc. 14, 4.

Sarawak : Abundant at Kuching (Ridley) ; Beccari, 175, 192 (Haviland, 210).

British North Borneo : Kudat (Fraser).

A very much larger plant than ordinary *W. suffruticosa*, Griff., of the Malay Peninsula, with big flowers 4 in. across, and white, not rose pink, fruit. It might be distinguished specifically, but I prefer to retain it as a variety of *suffruticosa*, which it more closely resembles in its silky buds than *subsessilis*, to which I referred it.

Wormia Beccariana, Martelli, l. c.

Sarawak : Kuching, and Bantin in Batang Lupar (Beccari, 134).

Hill path to Tegara (Haviland, 2047, 3076).

A very fine and distinct species with a silky zigzag rachis. Flowers yellow.

Endemic.

MAGNOLIACEÆ.

Drimys piperita, Hook., Ic. Pl. t. 896.

Kinabalu (Haviland, Low) !

Sarawak : Bongo, near Tegora (Haviland, 2067) ! Lobing Prah, at 5000 ft. (Lobb) !

Distrib. Philippines and New Guinea.

Illicium sp.

British North Borneo : Kinabalu (Haviland, 1272) !

Specimen insufficient for identification. Flowers red, borne on long stalks on the trunk.

Talauma gigantifolia, Miq., Fl. Ind. Bat. I. ii. 15.

Sarawak: Kuching (Haviland, 1801) !

Distrib. Sumatra.

Talauma obovata, Korthals, l. c., 98.

S.E. Borneo: Pamatton (Korthals).

Also without locality (Lowe).

Distrib. Bangka.

Talauma Candollei, Bl., Ver. Bat. Gen. i. p. 147. *T. mutabilis*, Bl., Fl. Jav.

British North Borneo (Creagh); Sandakan (Ridley, 9047).

These have more coriaceous leaves than is usual in this species, but are probably a form of *T. Candollei*.

Talauma Beccarii, n. sp.

Branches pale, buds and peduncle covered with yellow hairs. Leaves oblanceolate, cuspidate, glabrous, coriaceous; nerves fourteen pairs, inarching well within the margin, reticulations conspicuous on both surfaces, 18 cm. long, 5 cm. wide; petiole 2 cm. long, rather suddenly thickened at the base. Petals broad, oblong obtuse, apex rounded, 4 cm. long, 1.5 cm. wide. Stamens linear acuminate acute, 1.5 cm. long. Syncarp densely silky, woolly, acuminate from above the stamen, tips 3 cm. long, 1 cm. through, apices of carpels glabrous obtuse.

Sarawak (Beccari, 3959).

Allied to *T. Candollei*, Bl., differing in foliage, and with longer and broader petals.

There are several other species of Magnoliaceæ undeterminable in the Kew Herbarium.

Magnolia Maingayi, King, Mat. Mal. Pen. i. 13.

Sarawak: Kuching (Haviland, 939).

Distrib. Malay Peninsula.

Magnolia.

Sarawak (Beccari, 3660, 2661).

Michelia champaca, L. (DC. Prodr. 226).

British North Borneo: Port Vryburg (Creagh).

Probably not wild here.

Kadsura scandens Bl., Fl. Jav. Schizandreæ, p. 9, t. 1.

Sarawak (Beccari, 1637).

Distrib. Malay Peninsula and Islands.

ANONACEÆ.

Sageræa lanceolata, Miq., Ann. Mus. Ludg. Bat. ii. p. 10.

British North Borneo : Kudat (Fraser, 162) !

S.E. Borneo : Danau Bakay (Korthals) !

Sageræa elliptica, Hook. fil. & Thoms., Fl. Ind. 93.

Sarawak : Kuching (Haviland, 2215).

"A small tree ; flowers yellow, ovules many, in two rows." The leaves of the specimen are thicker than those of the Penang plant.

Distrib. Burmah and Penang.

Tetrapetalum volubile, Miq., l. c. p. 1.

Sarawak : Kuching (Haviland, 1968).

West Borneo (De Vriese).

Endemic.

Cyathostemma Hookeri, King, Mat. Flora, Malay, i. 10.

"Petals waxy, ovules eight in one series."

Sarawak : Kuching (Haviland, 2250 ; Beccari, 1811).

Distrib. Penang, Perak.

Sphærothalamus insignis, Hook. fil., Trans. Linn. Soc. xxiii. t. xx.

Sarawak River, Penrissen Road (Haviland, C. B. M. H.) ; (Lobb) ; (Beccari, 2964, at Matang).

British North Borneo : Madai (Creagh).

"Petals orange, smell sweet" (Haviland). A fine plant, with petals three inches long. The British North Borneo plant, however, has much smaller flowers. The petals are only 2.5 cm. long and 7 mm. wide. It might be distinguished as a variety *parviflora*.

Endemic.

Marcuccia grandiflora, Becc., Nuov. Giorn. Bot. Ital. iii. 181, pl. iii.

Sarawak : Matang (Beccari, 2741) !

Endemic.

Enicosanthum paradoxum, Becc., l. c. 184, pl. v. 13-17.

Sarawak : hills of Tubao ; Kajan in Bintulu (Beccari, 3770).

Endemic.

Uvaria argentea, Bl., Fl. Jav. Anon. 24.

S.E. Borneo : Pulan Lampei (Korthals). Not seen.

Uvaria acuminatissima, Miq., l. c. 6.

S.E. Borneo : Dusun River (Korthals).

Uvaria excelsa, Wall., Cat. 6477.

Sarawak : Kuching (Haviland, 422) !

Distrib. Malay Peninsula.

Uvaria ptychocalyx, Miq., l. c. 4.

S.E. Borneo : Sakambang ; Pulan Lampei, Lake Danau, Sambat, and Danau Gambar (Korthals) ; Banjarmasin (Motley) !

Distrib. Malay Islands.

Uvaria monticola, Miq., l. c. 5.

S.E. Borneo : Balaran Mt. (Korthals).

Endemic. Not seen.

Uvaria verrucosa, Schiff., Ann. Jard. Bot. Buitenz. ii. 3.

W. Borneo : Sungei Ajai, Kafucas (Teysmann).

Endemic.

Uvaria cauliflora, n. sp.

A climber ; young parts ferrugineous-tomentose. Leaves rather thin, obovate oblanceolate to elliptic ; apex cuspidate, often abruptly, broadest near the apex, narrowing to the base, where they are obtuse, 13–24 cm. long, 5–9 cm. wide, the cusp 1 cm. long ; nerves thirteen pairs, slender, midrib deciduously ferrugineous-tomentose ; petiole thick, transversely rugose, 5 mm. long. Flowers racemose or paniced from the stem with stout branches ; panicles 5–12 cm. long, branches rusty-tomentose. Bracts persistent, lanceolate, blunt, stiff, rusty-tomentose, 5–7 mm. long. Buds ovoid, 2 cm. long, with two distinct bracts on the pedicels, which are 2–5 cm. long. Calyx ovoid, irregularly dehiscing, red tomentose or mealy. Petals oblong-ovate, mealy outside, glabrous within, 7 mm. long, 5 mm. wide. Stamens linear oblong, 2 mm. long, appendage small and angled flat. Torus hemisphæric. Carpels numerous, truncate, with a short stigma. Ovules 6–9 in a cell.

Sarawak : Tegara (Haviland, c, k, q, a, 417), and foot of Bembang (409) ; (Beccari, 1120).

This species is remarkable for its nearly glabrous leaves, broadest at the tip and narrowing downwards, and its paniced flowers on the stem, and the calyx, which breaks up irregularly as the bud opens. It is allied to *Uvaria purpurea*, in which also the calyx disrupts irregularly. The

leaves in Beccari's specimen are smaller, more leathery and elliptic, but it is apparently specifically identical with the fine specimens collected by Dr. Haviland.

Uvaria lanuginosa, n. sp.

Stems, leaves, and flowers covered with an orange rusty tomentum, fugacious on the upper surface of the leaves. Leaves elliptic cuspidate, narrowed towards the base, but rounded at the base, 14 cm. long, 5 cm. wide; nerves seven or eight pairs, inarching within the margin; petiole 12 mm. long. Flowers small, in extra-axillary racemes on pedicels 5 mm. long. Bracts ovate to ovate lanceolate obtuse, 5 mm. long. Sepals ovate obtuse, 5 mm. long. Petals oblong obtuse, enlarged towards the tip, 1 cm. long. Stamens rather short oblong, with a rather large connective appendage. Carpels few, hairy; ovules in two rows, about sixteen.

Sarawak, near Kuching (Haviland & Hose, 334 k). "Petals pale."

Readily distinguished by its orange tomentum on the leaves and stem, and small flowers.

Uvaria ovalifolia, Bl., Fl. Jav. Anon. 27.

Sarawak: Rejang Siku (Haviland, 2315)! Miri River, near Baram (Hose, 601, 112)! Without locality (Beccari, 1760)!

British North Borneo: Kudat (Fraser, 85)! Var. *glabrata*; Sinpouna (Creagh)!

Var. *racemiflora*.

S.E. Borneo: Dusun River (Korthals).

British North Borneo: Tinkayo (Creagh)!

U. ovalifolia, Bl., differs from *U. macrophylla*, Roxb., the most widely diffused of the genus, in its nearly glabrous leaves and flowers, which are covered with soft woolly hairs in *U. macrophylla*.

I should be inclined to follow Miquel and Kurz in making it a variety only of that species.

Miquel, Ann. Mus. Lugd. Bat. ii. 6, gives four varieties from Borneo, viz. *normalis*, *acrantha*, *borneensis*, and *racemiflora*.

Uvaria purpurea, Bl., Bijdr. 11.

Var. more tomentose than usual.

Mt. Balaran and Pamatton (Korthals).

British North Borneo: Tinkayo (Creagh).

Var. with quite glabrous leaves.

British North Borneo : Kilabalangan (Creagh).

Distrib. Malay Peninsula and Islands.

Ellipeia cuneifolia, Hook. fil. & Thoms., Fl. Ind. 104. *E. gilva*, Miq. l. c. 9.

Sarawak : Kuching (Haviland, 1504); (Beccari, 318 and 3776).

Distrib. Malay Peninsula.

I am unable to separate *E. gilva*, Miq., from the Peninsula plant.

Cyathocalyx biovulatus, Boerl., Ic. Bogor. lv.

Sarawak : Kuching (Haviland, 851). Rejang Sibu (1869) ! (Beccari, 653) !

W. Borneo : Pontianak (Teysmann).

Cyathocalyx borneensis, Boerl., Ic. Bogor. ii. lvi.

Sebalouw (Teysmann).

Sarawak : Baram River (Hose, 207). Probably, but the description is very incomplete.

Endemic.

Cyathocalyx virgatus, King, l. c. 28. *Meiogyne virgata*, Miq., l. c. 12.

Sarawak : Entoyut River (Hose, 414) !

Distrib. Malay Peninsula ; Java.

Cyathocalyx Havilandii, Boerl., Ic. Bogor. i. lvii.

Sarawak : Kuching (Haviland, 1902), Bau. A large tree with cream flowers (C. J. Brooks) ; (Beccari, 2543, 528).

This much resembles *Xylopia olivacea*, Hook. fil., in outward appearance.

Monocarpia euneura, Miq., l. c. 12.

S.E. Borneo : Sakumbang (Korthals).

Endemic. Not seen.

Artabotrys suaveolens, Blume, Flor. Jav. Anon. 62, t. 30, 31 D.

Sarawak : Lundu (Haviland, 1518) ; Santubong (1540) ; Sarawak River (B 3, d d) ; (Beccari, 3748) ; Entoyut River (Hose, 160) ; Baram (Hose, 302). Labuan (Lobb).

S.E. Borneo : Banjarmasin (Motley).

W. Borneo : Sangei Landak (Teysmann).

Distrib. From Sylhet, Malay Peninsula and Islands.

Hose's plants have thinner leaves, more cuspidate.

Artabotrys gracilis, King, *l. c.* p. 35.

Sarawak: Kuching (Haviland & Hose, 3160). "Flowers yellow."

Distrib. Malay Peninsula.

Artabotrys sumatranus, Miq., Fl. Ind. Bat. Suppl. t. 375.

S.E. Borneo: Dusun River (Korthals).

This appears to me to be only a form of *A. suaveolens*, Bl.

Artabotrys roseus, Boerl., Ic. Bogor. i. liii.

Sarawak: Kuching (Haviland).

Endemic.

Artabotrys hirtipes, n. sp.

Branches black, covered with short stiff hairs. Leaves coriaceous, glabrous elliptic, long cuspidate, base slightly narrowed, nerves nine pairs, inarching at the tips, reticulations conspicuous, 10 cm. long, 3.5 cm. wide (the cusp 1 cm. long); petiole 6 mm. long. Flowers large, on pedicels covered with long red hairs, 1 cm. long. Bracts at the base ovate acuminate, with long red hairs. Sepals ovate lanceolate acuminate with red hairs, 5 mm. long. Petals lanceolate obtuse, keeled tomentose, base slightly dilate, not narrowed above the concavity, 2.5 cm. long, 1 cm. wide at the widest part, inner petals narrower and shorter. Stamens few, glabrous, connective appendage fairly large. Carpels irregularly wedge-shaped, with a broad flattened top, the biggest 2 cm. across, finely tomentose.

Sarawak: Rejang Kapit (Haviland, 2326); Kuching (2106); in fruit.

Allied to *A. hamatus*, Bl., but remarkably hairy. The specimen from Kuching has more coriaceous leaves, 15 cm. long and 6 cm. across, with stouter pedicels.

Artabotrys polygynus, Miq., *l. c.* 4.

Sarawak, near Kuching (Haviland, d, l, m, a).

British North Borneo (Creagh).

S.E. Borneo: Pamatton (Korthals).

Artabotrys Havilandii, n. sp.

Branches brown, longitudinally rugose or black, young branches hairy. Leaves coriaceous, elliptic acuminate, base cuneate, decurrent on the petiole, adult glabrous, nerves seven pairs, elevate on both surfaces, slender, anastomosing irregularly, 12 cm. long, 4 cm. wide or less; petiole 1 cm. long or less. Inflorescence borne on stout

hooks, flattened, and when young red-tomentose, as are the bracts, which are ovate and 2 mm. long; branches numerous, short. Pedicels hairy, 5–10 mm. long. Sepals ovate triangular acute, cuspidate, red hairy. Petals lanceolate obtuse, hardly indented above the base, hairy on both surfaces, 15 mm. long, 5 mm. wide, inner petals narrower. Stamens few, connective, rather large, rounded, white. Carpels about ten, subclavate, rugose when young, when ripe 2 cm. long, 1 cm. wide, ovoid, narrowed to the base, apex shortly beaked.

Sarawak: Kuching (Haviland, 1629, 3340); (Beccari, 381, 786, 713, 554).

Endemic.

Allied to *A. polygynus*, Miq., and *A. hamatus*, Bl.

Artabotrys castatus, King, l. c. 37.

Sarawak: Kuching (Haviland, 1750).

Artabotrys lanuginosus, Boerl., Ic. Bogor. lii.

Central Borneo (Jaheir).

Not seen. Endemic.

Artabotrys Blumei, Hook. fil. & Thoms., Fl. Ind. i. 128.

Sarawak: Kuching (Haviland, 1775).

Apparently this Javanese plant, but the fruit is less conspicuously beaked than in Blume's figure of *A. odoratissimus*, 'Fl. Jav. Anon.' 59, t. 28, 31B, which is the type of *A. Blumei*, Hook. fil.

Distrib. Java.

Drepananthus ramuliflorus, Maingay, Hook. fil., Fl. Brit. Ind. i. 56.

Sarawak (Beccari).

Distrib. Malay Peninsula and Sumatra.

Unona subbiglandulosa, Miq., l. c. 11.

Sarawak: Santubong (Ridley, 12464).

S.E. Borneo: Martapura (Korthals).

Unona borneensis, Miq., l. c.

S.E. Borneo: Pulan Lampei (Korthals).

Endemic.

Unona dasymaschala, Blume, Fl. Jav. Anon. 55, t. 27.

Sarawak: Kuching (Haviland, 1543).

Distrib. India, Malaya, Java, Sumatra.

Unona longiflora, Roxb., Fl. Ind. ii. 668.

There are specimens in Herb. Kew from Motley and Barber from Borneo, with no specific locality, which I cannot separate from the Indian plant; the leaves are, however, very glaucous on the back, with clearer marked reticulations, and the carpels more resemble those of *U. dasymaschala*.

The species is a native of Assam and Chittagong.

Unona flagellaris, Becc., l. c. p. 186, pl. v. 9-12.

Sarawak, at Entebai, Kajau (Beccari, 3864).

Endemic. Peculiar from its producing the flowers on subterranean branches.

Unona verrucosa, Becc., l. c. 185, pl. v.

Sarawak: Matang (Beccari, 2562).

Unona discolor, Vahl, Symbol. ii, 63, t. 36.

Sarawak (Beccari, 3420).

Labuan (Motley).

British North Borneo: Tinkayo (Creagh).

S.E. Borneo: Banjarmasin (Motley).

Distrib. Assam, Burmah, Malay Peninsula, Archipelago, and China.

Unona Teysmanni, Boerl., Ic. Bogor. i. 193.

W. Borneo: Sungei Landak (Teysmann).

This is very similar to *Unona discolor*, Vahl.

Unona purpurata, n. sp.

Shrub; bark pale. Leaves elliptic cuspidate, bases rounded, coriaceous, glabrous, nerves nine pairs, secondary nerves nearly as conspicuous, reticulations visible, elevate on both sides, 10-18 cm. long, 4-5 cm. wide; petiole thick, transversely rugose, 5 mm. Flowers solitary on the old wood, pedicels 1 cm. long. Sepals ovate acute or obtuse, 1 mm. long. Petals lanceolate obtuse, 2.5 cm. long, 6 mm. wide, pubescent, the inner ones broadest, ribbed at the base for one-third its length. Stamens short, five rows, appendages angular, pale, flat. Styles hairy. "Ovules about 11." Carpels on pedicels, 6 mm., ovoid or oblong, 4, 1.5 cm. long, 1 cm. thick. Peduncle thickened.

Sarawak: Kuching (Haviland, 1779). "Petals at first pale, then claret colour."

Unona jambosifolia, n. sp.

A shrub. Leaves subcoriaceous, glabrous, pale beneath, or reddish elliptic to lanceolate elliptic acuminate, base rounded, cordate, subpeltate, 17 cm. long, 5-7 cm. wide; nerves above depressed, ten pairs, regularly inarching 5 mm. within the margin; petiole 2-4 mm. long, thick, hairy. Flowers in pairs on the lower part of the stem on pubescent pedicels 1 cm. long. Sepals semiorbicular, thick, pubescent at first, edges ciliate with red hairs. Petals subequal, ovate lanceolate oblong, thick, glabrous except some reddish hairs on the edge, 1 cm. long, 6 mm. wide. Stamens numerous, appendages broad, flat, angled. Pistils hairy. Ripe carpels globose or cylindric hairy, shortly beaked, about 14, 10 mm. long, 7 mm. wide, 1-4 seeded.

British North Borneo: Batu Putih (Creagh); Kudat (Fraser).

This belongs to the set of Unonas represented by *U. Wrayi*, *U. desmantha*, &c., which are in every point closely allied to *Polyalthia* except in the presence of more than two ovules in the ovary. It seems to me to be doubtful whether they should be retained at all in the genus *Unona*. This is a peculiar plant in its foliage, which is curiously like that of an *Eugenia* of the *Jambosa* section, nearly sessile, and with a curious inarching venation. The flowers seem to have been purple.

Polyalthia Beccarii, King, l. c. 65.

Sarawak (Beccari, 668, 710, 391, 2277, &c.); Kuching (Haviland, 412); Mt. Bongo, near Tegara (Haviland, 2070); Matang, at 1000 ft. altitude (Hallett), and at 1600 ft. (Haviland, 406); Mt. Trekau (Hose), at 2000 ft.; Miri River (Hose, 558).

Labuan (Motley, 165).

S.E. Borneo: Banjarmasin (Motley, 959).

Distrib. Malay Peninsula. A common little tree.

Polyalthia sumatrana, King, l. c. 53.

Sarawak (Beccari, 1438, 630, 1586, 1160); Kuching (Haviland, 2210, 1680).

S.E. Borneo (Korthals).

Polyalthia Teysmanni, Boerl., Ic. Bogor. 107.

Sarawak: Kuching (Haviland, 413).

S.E. Borneo: Sakumbang (Korthals).

Polyalthia obliqua, Hook. fil. & Thoms., Fl. Ind. 138.

Borneo, *sine loco* (Lowe in Herb. Kew).

Distrib. Chittagong, Malacca, Sumatra.

Polyalthia hypoleuca, Hook. fil. & Thoms., Fl. Brit. Ind. i. 63.

S.E. Borneo : Banjermasin (Motley).

Distrib. Malay Peninsula.

Polyalthia oblonga, King, l. c., 65.

Sarawak (Beccari, 1621) ; Mt. Koum (Haviland, 1711) ; Saribas Paku (Haviland, 3149).

These forms have more persistently silky petals than those of the Malay Peninsula plants, and the leaves on the whole are smaller. A plant labelled "Singapore, Lobb," in Herb. Kew, more resembles the Bornean form, and, as Lobb's localities are always doubtful, probably came from Borneo. Haviland's plant from Saribas has more narrow lanceolate acute petals.

Distrib. Malay Peninsula.

Polyalthia Havilandii, Boerl., Ic. Bogor. lxvi.

Sarawak : Kuching (Haviland).

Endemic.

Polyalthia Jenkinsii, Hook. fil., Gen. Plan i. 25. *P. canangioides*, Boerl., Ic. Bogor.

Sarawak : Kuching (Haviland, 105, 420, 1057, 2217) ; Miri River (Hose, 72).

Petals yellow, purple at base.

Distrib. Assam, Sylhet, Malay Peninsula, Sumatra.

Boerlage separated again Miquel's *Monoon canangioides* from *Jenkinsii* under the above name on account of a slight difference in the form of the fruit, but I think it is specifically the same, as King makes it.

Polyalthia eriantha, n. sp.

Young parts woolly, hairy, yellowish. Leaves elliptic acuminate, base narrowed thinly coriaceous glabrous above, minutely pubescent beneath ; nerves nine to ten pairs, inconspicuous above, elevate beneath ; transverse nerves subhorizontal parallel ; reticulations fine, 20-30 cm. long, 8-10 cm. wide ; petiole thick pubescent, 1 cm. long. Flowers solitary, axillary entirely velvety woolly ; pedicel thick, 7 mm. long ; bract ovate ; sepals ovate

obtuse, 7 mm. long. Outer petals ovate lanceolate obtuse, 2 cm. long, 1 cm. wide. Inner petals smaller and narrower. Anthers numerous, with rounded appendage. Pistils hairy.

Sarawak, five miles from Kuching (Haviland, 410).

Not clearly allied to any species known to me, but perhaps nearest to *P. congregata*, King, or its allies, though the flowers are borne on the branches and not on the trunk. Their densely woolly hairy covering all over, except the stamens, is peculiar.

Polyalthia coriacea, n. sp.

A small tree. Leaves coriaceous glabrous except the midrib on both surfaces and the nerves beneath, hairy elliptic, obtuse to oblong, shortly acuminate, base broad rounded; nerves, twenty pairs, depressed above, elevated beneath parallel; secondary nerves transverse, elevated parallel, 21–42 cm. long, 10–16 cm. wide; petiole stout, 1 cm. long, closely hairy. Flowers in a short raceme; peduncle thick, hairy, 1 cm. or less long, with ovate bracts all rufous, hairy; pedicels 2–3 cm. long. Sepals triangular, acute or acuminate, tomentose outside, 6 mm. to 2 cm. Petals “yellow” (Haviland), “cream-colour” (Brooks), 4 cm. long, 1 cm. wide, oblong obtuse. Pistils hairy. Torus semiovoid, hairy. Carpels cylindric, shortly beaked, velvety, shortly stalked, 4 cm. long, 2 cm. in diameter.

Sarawak: Mt. Buan limestone (Haviland, 2002); Bidi (C. J. Brooks, 1057).

This is allied to *P. congregata*, King, but differs in possessing a distinct petiole to the leaves, which are somewhat stiffer, a short raceme and smaller flowers.

Brooks's plant differs from Haviland's in its much larger leaves acuminate shortly at the tip, and larger distinctly acuminate sepals. I have little doubt that they belong to the same species. The flowers are borne on the trunk of the tree as in *P. congregata*, &c.

Polyalthia nervosa, Boerl., Ic. Bogor. lxviii.

Borneo (Teysmann).

Var. *Nieuwenhuizii*, Boerl., l. c.

Central Borneo (Jaheri). Not seen.

Polyalthia (Monoon) *submitrata*, Miq., l. c., 16.

S. Borneo: Muara Kurran (Korthals). Not seen.

Polyalthia anomala, Becc., l. c., 189.

Sarawak: Matang (Beccari, 1605).

Endemic, not seen.

Monoon ? sublaceolatum, Miq., l. c., 18.

Collected at Mt. Pamatton by Korthals; is a dubious plant which may belong to *Polyalthia*.

Disepalum anomalum, Hook. fil., Trans. Linn. Soc. xxiii. 156, t. 20.

Sarawak: Kuching (Haviland, 1652); (Beccari, 756); (Lobb). Matang (Ridley, 12255).

Endemic.

Disepalum coronatum, Beccari, Nuov. Giorn., l. c., 155.

Sarawak (Beccari, 1722); Mt. Matang at 2800 ft. elevation (Haviland, 1502); Mt. Singhi (Haviland, 2024).

Endemic.

Disepalum grandiflorum, n. sp.

Shrub, branches pale. Leaves elliptic cuspidate, narrowed at the base, cuneate to ovate, thin glabrous; nerves, eight pairs, very slender, 8-13 cm. long, 5-5.2 wide; petiole 5 mm. long. Flowers solitary from the uppermost axil, opposite the leaf, on slender ebracteate pedicels 3 cm. long. Sepals two, ovate obtuse, deplexed, 10 mm. long, 8 mm. wide. Corolla with a distinct pedicel 3 mm. long above the sepals; petals four, linear-spathulate from a broader base and connate below into a cup, hairy with red hairs, free portions 7 mm. long, with the tube 2 cm. long and 1 cm. across. Stamens with an orbicular convex appendage, very numerous.

Sarawak: Baram (Hose, 142); Marudi (Hose, 214).

This species is distinguished from *D. anomalum* by its larger flowers, with longer petals, and a distinct stalk between the sepals and corolla cup.

Anaxagorea ramiflora, Boerl., Ic. Bogor. li.

Central Borneo (Jaheri).

Endemic.

Eburopetalum borneense, Becc., l. c., 181, pl. ii.

Sarawak: Sabumban River, branch of the Singa, Batang Lupar (Beccari, 3936).

Endemic.

Goniothalamus macrophyllus, Hook. fil. & Thoms., *l. c.*, p. 74.

Sarawak : Hill near Bau (Haviland, 2032) and Rejang Sibu (424) (Beccari, 2327).

Distrib. Malay Peninsula and Sumatra.

Goniothalamus malayanus, Hook. fil. & Thoms., Fl. Ind. 107. *G. dispersus*, Miq.

Sarawak : Kuching (Haviland, d, x, f, c, 6 and 924).

British North Borneo : Kinabalu (Haviland, 1313).

S.E. Borneo : Banjarmasin (Motley).

Distrib. Malay Peninsula and Bangka.

Goniothalamus Tapis, Miq., Fl. Ind. Bat. Suppl. 371.

Sarawak : Rock Road (Haviland, 405 ; Beccari, 788, 1836, 357) ; Baran (Haviland and Hose, 3150).

Distrib. Malay Peninsula and Sumatra.

Goniothalamus giganteus, Hook. fil. & Thoms., *l. c.*, 109.

Sarawak : Kuching (Haviland, 2107).

Distrib. Malay Peninsula.

Goniothalamus roseus, Stapf, Trans. Linn. Soc., *l. c.*, 130.

British North Borneo : Kinabalu at 6000 ft. (Haviland, 1217).

Endemic.

Goniothalamus stenopetalus, Stapf, *l. c.*, 129.

British North Borneo : Kinabalu, Penokok (Haviland, 1217).

Goniothalamus rufus, Miq., *l. c.*, 35.

This species was based on a few leaves only, collected by Korthals at Gunong Rantan in Borneo. Specimens of these are in the Kew Herbarium, and I find in Dr. Haviland's collections complete specimens which correspond in foliage so exactly to these, that I have little doubt that they belong to the same species. As the plant has never been fully described, I herewith give a description from Dr. Haviland's description.

"A small tree about 17 ft. tall," young parts densely red hairy. Leaves lanceolate acuminate, base rounded, rather thin in texture, thinly hairy above, margins red hairy, midrib hairy on both surfaces ; nerves, eleven pairs, very fine and inconspicuous ; bifurcating within the margin, 12-14 cm. long, 2-3 cm. across ; petiole 5 mm., long, hairy. Flowers solitary in the uppermost axils, pedicels 3 mm.

long, with two or three lanceolate linear acute red hairy bracts. Sepals ovate obtuse, hairy on the edge. Outer petals lanceolate acuminate obtuse, hairy, 1 cm. long; glabrous within. Inner petals broader, lanceolate obtuse, shorter, 8 mm. long. Stamens fairly numerous, short; appendage suborbicular, rather large flat glabrous. Ripe carpels elliptic, 12 cm. long; 7 cm. shortly beaked, stalk 12 mm. long.

Sarawak: Lundu on Mt. Gading (Haviland, 982); Gomong Rantau (Korthals).

Goniothalamus parallelovenius, n. sp.

Leaf large, oblong, slightly narrowed towards the base; apex cuspidate obtuse, base rounded, thinly coriaceous glabrous; nerves, thirty-six pairs, parallel, conspicuously elevate beneath, inarching within the margins; midrib rounded. Flower large, on a rather stout pedicel 2.5 cm. long. Sepals coriaceous triangular, obtuse, 6 mm. long, 5 mm. across at the base. Outer petals coriaceous narrow, lanceolate acuminate obtuse, minutely mealy hairy, 6.5 cm. long, 1 cm. wide; base dilate, 5 mm. long. Inner petals broadly lanceolate, narrowed at the base, obtuse, 4 cm. long, 12 mm. wide. Stamens narrow, linear 3 mm. long with a narrow conic erect scabrid appendage.

Sarawak (Beccari, 3772).

This appears to be most nearly allied to *G. uvarioides*, King, differing in its much larger flowers and long inner petals. The leaf resembles closely that of *G. Curtisii*, King. I have only seen one leaf and a detached flower.

Goniothalamus uvarioides, King, l. c. 78.

Borneo (Motley, 960). Not seen.

Distrib. Malay Peninsula.

Goniothalamus fasciculatus, Boerl., Ic. Bogor. lix.

Central Borneo (Jaheri). Not seen.

Endemic.

Goniothalamus Ridleyi, King, is stated by Boerlage to have been collected in Borneo by Beccari (*sub* Ic. lix.). I have not seen it.

Mitrephora humilis, Miq., Fl. Ind. Bat. i. ii. 31. *M. Main-gayi*, Hook. fil. & Thoms., Fl. Br. Ind. i. 77 var. *Kurzii*.

Sarawak: Mt. Koum limestone (Haviland, 1716); Baram (Hose, 98).

British North Borneo: Kinabalu, Dakombang (Haviland, 1311).

S.E. Borneo (Korthals).

Mitrephora Korthalsiana, Miq., *l. c.* 28.

Sarawak (Beccari, 3214).

S.E. Borneo : Sakumbang (Korthals).

Mitrephora glabra, Scheffer, *l. c.* 20.

Sarawak (Beccari, 2772) : Saribas Paku (Haviland, 1353) and Sarawak River ; Simpang Kiri River (C. J. Brooks).

West Borneo : Sungei Landak (Teysmann).

Mitrephora rufescens, n. sp.

A small tree 17 ft. tall ; the branches, petioles, nerves, and young parts all red hairy. Leaves elliptic to lanceolate, acuminate rounded or shortly cuneate at the base ; thinly coriaceous, glabrous above in adults, 16–20 cm. long, 5–8 cm. wide ; petiole 5–8 mm. long, red hairy. Flowers axillary on very short hairy racemes, opening one at a time. Bracts ovate persistent. Sepals ovate acute, rufous hairy. Petals outer, ovate acute, silky outside, glabrous within, 1 cm. long, 5 mm. wide ; inner ones with a linear claw and a reniform apex, outside pubescent, limb inside silky. Stamens numerous glabrous, the appendage rounded semiglobose.

Sarawak : Matang (Haviland, 1035), Banon limestone (2249) (Beccari, 1616).

Sumatra : Sungei Buluh, Padang (Beccari, 916, 968).

Near *M. longipetala*, Miq., from the description, but the petals are much smaller and quite different in shape ; those of *M. longipetala* being described as linear lanceolate and “ pollice parum longiora.”

Mitrephora reticulata, Hook. fil. & Thoms., *l. c.* i. 77.

Sarawak (Beccari, 3946).

Distrib. Malay Peninsula.

Mitrephora excelsa, Hook. fil. & Thoms., *l. c.* 114.

Labuan (Motley, Barber).

Mitrephora longipetala, Miq., *l. c.* p. 28.

S.E. Borneo : Sakumbang (Korthals).

Endemic. Not seen.

Mitrephora obtusa, Bl., var. *glabra*.

Sarawak : Mt. Koum limestone (Haviland, 1714).

More glabrous than the type form, hairy on the midrib only, and the inner petals less hairy ; apparently a lime-

stone form. "Petals, when young, white, spotted with red; when old, yellow with red spots."

Distrib. Java.

Mitrephora? parallelivenia, Boerl., Ic. Bogor. p. 140.

Borneo (*fide* Boerlage).

Mitrephora chrysocarpa, Boerl., Ic. Bogor. i. ii. 141.

Orophea chrysocarpa, Miq.

S.E. Borneo: Martapura, Dusun River (Korthals).

Var. *sakumbangensis*.

Sakumbang (Korthals).

Orophea borneensis, Miq., l. c. 25.

Borneo: Without locality (De Vriese).

Endemic. Not seen.

Orophea pamattonis, Miq., l. c. 24.

S.E. Borneo: Mt. Pamatton (Korthals).

Orophea trigyna, Miq., l. c. 25.

S.E. Borneo (Korthals).

Orophea dodecandra, Miq., l. c. 25.

S.E. Borneo (Korthals).

Distrib. Malay Peninsula.

Popowia ramosissima, Hook. fil. & Thoms., l. c. 105. *P.*

rufula and *P. affinis*, Miq., l. c. 20.

S.E. Borneo: Pamatton (Korthals).

Distrib. Malay Peninsula and Sumatra.

Popowia hirta, Miq., l. c. 21.

Sarawak: Kuching (Haviland, 1824).

Distrib. Sumatra.

Popowia pisocarpa, Endl., Walp. Ann. Rep. i. 74.

Sarawak: Entoyut River (Hose, 426).

S.E. Borneo: Banjarmasin (Motley).

Distrib. Java.

Popowia tomentosa, Miq., l. c. 21.

Borneo (Teysmann). Not seen.

Popowia novo-guineensis, Miq., l. c. 24.

Borneo (Teysmann). Not seen.

Distrib. New Guinea.

Phæanthus crassipetalus, Becc., *l. c.* 191, pl. vi. 11–15.

Sarawak: Matang (Beccari, 2508, 3708); Kuching (Haviland, 1810).

Endemic.

Phæanthus splendens, Miq., *l. c.* 40.

S. Borneo (Korthals).

Endemic. Not seen.

Melodorum manubriatum, Hook. fil. & Thoms., Fl. Ind. 118.

Sarawak: Kuching (Haviland, 411).

S.E. Borneo: Banjarmasin (Motley).

Distrib. Malay Peninsula and Bangka.

Melodorum borneensis, Miq., *l. c.* 36.

S. Borneo (Korthals).

Endemic.

Melodorum Korthalsi, Miq., *l. c.* 37.

S.E. Borneo: Martapura; Pulau Lampei; Pamatton (Korthals).

Melodorum prismaticum, Hook. fil. & Thoms., *l. c.* 121.

Pyramidanthe rufa, Miq., *l. c.* 39.

S.E. Borneo: Martapura (Korthals).

Distrib. Malay Peninsula and Bangka.

Oxymitra biglandulosa, Scheff., *l. c.* xxxi. 341.

S.E. Borneo: Balaran (Korthals).

Distrib. Malay Peninsula and Islands.

Oxymitra Mottleyana, Hook. fil., Trans. Linn. Soc. xxvii. 155.

Labuan (Barber, Motley).

Endemic.

Oxymitra borneensis, Miq., *l. c.* 30.

Sarawak (Beccari, 3571, 23280, 1107); Kuching (Haviland, 1831); Martapura, Pamatton (Korthals).

This species is very near *O. affinis*, Hook. fil., but is more hairy on the leaves. It will probably prove to be but a variety of this species.

Oxymitra glauca, Hook. fil. & Thoms., Fl. Ind. i. 146.

Sarawak (Beccari, 2911); Saribas Paku (Haviland, 3152).

Distrib. Malay Peninsula and Sumatra.

Oxymitra oxyphylla, Miq., l. c. 29.

S.E. Borneo: Danau Bahay, Danau Kambat, Muara Karrau (Korthals).

Endemic. Not seen.

Oxymitra Korthalsiana, Miq., l. c.

S.E. Borneo: Banju-wiran (Korthals).

Endemic.

Oxymitra diadema, Miq., l. c. 31.

S.E. Borneo: Sakumbang (Korthals).

Endemic. Not seen.

Oxymitra excisa, Miq., l. c. 32.

Sarawak: Kuching (Haviland, 2216, 2103).

Distrib. Bangka (Teysmann); Sumatra (Korthals).

The type specimen from Sumatra of this curious plant has narrow leaves, glaucous beneath, as in the original description. In Haviland's and Teysmann's they are very much larger, 15 cm. long, 10 cm. wide, oblong obovate and retuse, or broadly truncate. The glaucous colouring of the under side is almost invisible from the covering of red tomentum. In Haviland's 2216 a ridge runs down the stem on each side from the juncture of the petiole, meeting 15 mm. below, and from the point of meeting springs the flower. In the other specimens and part of this one these ribs are not or hardly detectible, and the flowers are much closer to the petiole. The large ribbed bract close to the flower and the ribbed calyx increasing much in size after the fall of the petals is very peculiar. The inner petals in Haviland's 2103, the only ones I have seen, are quite two-thirds as long as the outer ones. Miquel says one-half only. Otherwise his description fits this plant very well. It is very *Melodorum*-like, and has but one ovule to the carpel.

Oxymitra linderifolia, n. sp.

A glabrous shrub. Leaves coriaceous, smooth above, glaucous beneath, elliptic cuspidate acute, base rounded or shortly cuneate; nerves six pairs, elevated beneath; midrib rounded beneath, depressed above, 15-18 cm. long, 6-8 cm. wide; petiole 11 mm. long. Flowers solitary, extra-axillary, pedicels slender, 10 mm. long, with a short lanceolate bract in the middle. Sepals dagger-shaped, with a broad base narrowed to the point, 4 mm. long. Outer petals lanceolate linear, 9 mm. long, 3 mm. wide, fugaci-

ously pubescent. Inner petals in a narrow cone, 5 mm. long. Torus very small, hairy. Pistils conic, hairy. Ovules one or two, superposed. Carpels globose, 5 mm. long, on pedicels of equal length.

Sarawak: Kuching (Haviland, 3333; Haviland & Hose, 3335).

The latter specimen, in fruit only, has smaller leaves, but appears to belong to the same species as the flowering specimen. The species is allied to *O. glauca*, from which it differs in the more coriaceous leaves, with fewer nerves, and the wider petals.

Melodorum Maingayi, Hook. fil. & Thoms., *l. c.* 80.

Sarawak: Santubong (Bartlett, Haviland, 1539).

Melodorum latifolium, Hook. fil. & Thoms., *l. c.* 116.

Sarawak (Beccari, 3787); Kuching (Haviland, 849).

Distrib. Malay Peninsula, Sumatra, Java, Philippines.

Melodorum parviflorum, Scheffer, Nat. Tijdschr. Ned. Ind. xxxi. 344.

Var. *angustifolium*.

Sarawak: Kuching (Haviland).

Not the plant referred to this species by King, which is described by Boerlage (Ic. Bogor. ii. 134) as *M. Kingii*, Boerl.

Distrib. Bangka.

Melodorum fulgens, Hook. fil. & Thoms. *l. c.* 120.

Sarawak, two miles from Kuching (Haviland, 416).

British North Borneo: Kabun China (Creagh); Brunei (Lobb).

W. Borneo: Sungei Landak (Teysmann).

Distrib. Malay Peninsula, Philippines.

Melodorum kinabaluense, Stapf, Trans. Linn. Soc. ser. ii. vol. iv. 130.

British North Borneo: Mt. Kinabalu, at Penokok, at 3000 ft. elevation (Haviland, 1310).

Endemic.

Melodorum paniculatum, n. sp.

Young parts ferruginous tomentose. Leaves elliptic acuminate, base rounded, coriaceous, glabrous above except the midrib, hairy; beneath rufous-tomentose; nerves prominent beneath, rufous-tomentose, eleven to twelve

pairs, 9–11 cm. long, 2.5–5 cm. wide; petiole stout, 5 mm. long. Inflorescence terminal, paniced, 9–14 cm. long, branches 5 cm. long, all rufous-tomentose. Bracts lanceolate acute, 1 mm. long. Pedicels 1 cm. long. Buds ovoid. Sepals ovate triangular, 2 mm. long. Outer petals ovate subacuminate obtuse, red-hairy outside, pale tomentose within, 8 mm. long, 4 mm. wide. Inner petals about as long, thick keeled, tips fugaciously hairy. Stamens oblong, few, short; appendage subtriangular, beaked, shining olive brown. Carpels rather few, covered with long red hairs, apices glabrous.

Sarawak: Kuching (Haviland, 1845).

This species is near *M. litseæfolium*, King, but differs in its larger flowers and the red tomentum, and the different form of the stamens.

Melodorum fagifolium, n. sp.

Glabrescent, branches red-scurfy. Leaves ovate to elliptic or oblong; apex blunt or shortly cuspidate, base rounded, above feebly scurfy, beneath more scurfy, pale; nerves red-scurfy, inconspicuous above, prominent beneath, not inarching, nine pairs, 7–10 cm. long, 4–5 cm. wide; petiole black, red-scurfy, 15 mm. long. Panicles short, subterminal, lax, red-scurfy, 7 cm. Bracts small, 1 mm., lanceolate ovate. Pedicels 7 mm. long. Buds long conic, 3-angled, blunt, tapering. Sepals ovate, 2 mm. Outer petals lanceolate, outside red-scurfy, 1 cm. long. Inner petals shorter, lanceolate, glabrous. Stamens in four whorls; appendage rounded, not beaked, convex, glabrous. Pistils few, hairy.

Sarawak: Entoyut River (Hose, 397).

Allied to *M. litseæfolia*, King, but with very glabrous leaves only, red-scurfy, and that somewhat thinly.

Melodorum rubiginosum, var.

Sarawak River (Haviland, 5); near Kuching (877); (Beccari, 1410, 1041); Haviland & Hose (3336).

I am not quite certain of the identification of all of these, as they are only in young bud or fruits. The leaves are very glabrous, and the fruit wrinkled and velvety. They resemble, however, the var. *oblonga* of King.

Melodorum rigidum, n. sp.

A climber, with black branches. Leaves coriaceous, elliptic cuspidate, base rounded, above smooth, midrib

depressed, nerves eight pairs, very inconspicuous on both surfaces, beneath red-scurfy, 9–11 cm. long, 3–4 cm. wide; petiole 1 cm. long. Flowers solitary axillary on red-scurfy pedicels 6 mm. long. Calyx saucer-shaped, entire, not lobed. Outer petals lanceolate obtuse, base broader, gradually tapering, dark rufous-tomentose, 15 mm. long, 4 mm. wide at base. Inner petals much shorter. Fruit cylindric, obtuse, slightly narrowed at the base, thinly velvety red-brown. Seeds seven, deep mahogany brown, shining.

Sarawak: Kuching (Haviland, 421); (Beccari, 393).

This plant is remarkable for its coriaceous smooth leaves and entire unlobed calyx. Fruit 3 cm. long, 2 cm. through.

Melodorum longipetalum, n. sp.

Branches slender, rufous-tomentose when young. Leaves lanceolate acuminate acute, base rounded, above glabrous, smooth, grey when dry, beneath glaucescent, quite glabrous when adult except the midrib, which is red-tomentose; nerves inconspicuous, but visible beneath with fine shining hairs in young leaves, 6–7 cm. long, 3 cm. wide; petiole 1 cm. long, scurfy only in adult leaves, red-tomentose when young. Flowers solitary axillary, pedicels 2 cm. long or less, with a small linear bract. Sepals lanceolate acuminate, 3 mm. long. Outer petals linear lanceolate acuminate, thinly red-tomentose outside, glabrous inside, 2.5 cm. long, 4 cm. wide. Inner petals shorter, linear, half as long, glabrous acuminate. Carpels on a distinct cylindrical torus, covered with appressed yellow silky hairs.

Sarawak: Kuching (Haviland, 2102).

This resembles *M. fulgens*, Hook. fil. & Thoms. in the form of its leaves, which, however, are smoother and more coriaceous. The long narrow petals, however, make it very distinct from any species of this affinity. The flowers are sweet-scented.

Melodorum ovalifolium, n. sp.

Climber, branches tomentose. Leaves small ovate to elliptic acuminate shortly, blunt; base broad, peltate, with two glands at the base, coriaceous, glabrous above except the midrib, glaucous beneath except the nerves, covered with red hairs, 5 cm. long, 2.5 cm. wide; petiole pubescent, 4 mm. long. Flowers solitary, extra-axillary opposite the leaves, on slender pedicels, hairy, 2.5 cm. long, with minute bracts. Sepals ovate obtuse, red, hairy, 2 mm. long.

Outer petals 2·5 cm. long, 4 mm. wide at the base, rather abruptly narrowed, linear obtuse, red, hairy. Inner petals very short, lanceolate, glabrous, acuminate, 5 mm. long. Stamens with the appendage prolonged backwards, depressed in the centre.

Sarawak : Kuching (Haviland, 3141, 3151).

This is, I think, certainly a *Melodorum* and not a *Xylophia*, as it is clearly a climber. The leaves are very remarkable in being small ovate, with two glands at the base close to the petiole.

Melodorum Kentii, Hook. fil. & Thoms., *l. c.* 116. *Mitrella Kentii*, Miq., *l. c.* 39.

Sarawak (Beccari, 2268, 3740).

S.E. Borneo : Sakumbang (Korthals).

Distrib. Java.

Xylophia malayana, Hook. fil. & Thoms., *l. c.* 125.

Sarawak : Kuching (Haviland, 1842).

British North Borneo : Kudat (Fraser, 114) ; Paku-Paku, Labuk Bay (Ridley, 9059).

Distrib. Malay Peninsula, Sumatra.

Xylophia stenopetala, Oliver, *l. c.* Pl. 1563.

Sarawak : Penkulu Ampat (Haviland, b, p, m, d) ; Bau (2022).

Distrib. Penang.

Xylophia fusca, Maingay in Hook. fil., *Fl. Brit. Ind.* i. 85.

Sarawak (Beccari, 555).

Xylophia Ridleyi, King, *l. c.* 121.

Sarawak : Sadong (Haviland, 856).

Distrib. Singapore.

Xylophia mucronata, Boerlage, *l. c.* Bogor. ii. lxxv.

Sarawak (Beccari, 1579, 1578, 1583, 1437) : Kuching (Haviland, 1009) ; swampy jungle near Kuching (Haviland, 414).

Haviland says this is a climber, and the petals are yellowish.

Xylopia oxyantha, Hook. fil. & Thoms., *l. c.* 85.

Sarawak: Kuching (Haviland, 1966).

The leaves are more coriaceous than in the type. The fruit is ellipsoid, blunt, narrowed at the base, 3.5 cm. long, 1.5 cm. wide, very unlike that of *X. ferruginea*, which is otherwise closely allied.

Distrib. Singapore.

Xylopia ferruginea, Hook. fil. & Thoms., *l. c.* 85.

Sarawak (Beccari, 3488): Baram, Morudi (Hose, 261).

Distrib. Malay Peninsula.

Xylopia congesta, n. sp.

Glabrescent; leaves lanceolate, shortly acuminate, base shortly narrowed, thinly coriaceous, glabrous above except the depressed mid vein, which is obscurely pubescent; nerves eleven pairs, obscurely pubescent, transverse nerves and reticulations invisible, 8–9 cm. long, $3\frac{1}{2}$ cm. long, petiole 4 mm. Flowers in tufts in knots on the old wood, pedicels 1 cm. long, pubescent. Sepals very small, rounded, 1 mm. long, pubescent. Outer petals linear from a broader base, 3 cm. long, 1 mm. wide. Inner ones similar, hardly pubescent, drying black. Stamens numerous, appendage irregularly rounded, depressed in the centre. Carpels rather numerous.

Sarawak (Beccari, 2654).

Allied to *X. Scortechinii*, King, but much smaller in all parts.

Xylopia coriifolia, n. sp.

Branches stout. Leaves elliptic rounded obtuse at the tip or obovate, narrowed at the base, very coriaceous, shining nerves faint above, inconspicuous beneath, seven or eight pairs inarching within the margin, intermediate nerves nearly as prominent, all very fine, 11–13 cm. long, 4–5 cm. wide, petiole 5 mm. long, stout. Flowers few, 2 or 3, in extra-axillary tufts, pedicels 1 cm. long. Sepals ovate acute, glabrous, 2 mm. long. Petals lanceolate, silky. Carpels cylindric, narrowed at the base, 6 cm. long, 7 mm. across, on a pedicel 15 mm. long.

Sarawak: Kuching (Haviland & Hose, 3337); (Hose, 1906); (Beccari, 2652, 3335).

In all these the flowers are too young to be fully described, but the plant is very distinct in its coriaceous obovate leaves, and long fruit, like that of *X. ferruginea*.

Xylopia Havilandii, n. sp.

A large tree; the buds coppery, hairy. Leaves stiffly coriaceous lanceolate, narrowed at both ends, apex subacute, glabrous except the midrib, covered with appressed hairs, dark above, reddish glaucescent beneath, 6–7 cm. long, 2–3 cm. wide; petiole channelled, the blade being decurrent to the base, 5–10 mm. long. Flowers numerous, in axillary clusters of three or four, racemose on appressed hairy peduncles, 1 cm. long, with ovate bracts. Sepals connate into a cup with three ovate acuminate points appressed, hairy, 3 mm. long. Outer petals linear, 16 mm. long, acuminate from a rounded base, appressed, hairy. Inner petals narrower, linear, nearly as long. Stamens rather long, linear; appendage small, conic. Pistils long-styled, red, hairy; styles glabrous. Carpel (not quite ripe) obovoid, apex rounded, base narrowed, glabrous, 2 cm. long, 7 mm. through.

Sarawak: Kuching (Hose & Haviland, 3352, and Haviland, 2334). "Petals yellow, ovules numerous."

This somewhat resembles *X. ferruginea*, Hook. fil., but the fruit is quite different, and the flowers less hairy.

Xylopia pulchella, n. sp.

Glabrous. Leaves ovate obtuse rounded or slightly narrowed at the base, smooth (grey when dry above, red-brown beneath); nerves six to seven pairs, faint on both surfaces, 4.5 cm. long, 3–3.5 cm. wide; petiole 5 mm. long. Flowers solitary, extra-axillary, pedicels 5 mm. long. Calyx cup-shaped, entire, with three short points glabrous, 2 mm. long. Outer petals lanceolate, dilate at the base, yellow, pubescent outside, 12 mm. long. Inner petals much narrower, linear, nearly as long, red at the base. Anthers numerous, slender; appendage conic, small, as in *X. obtusifolia* red. "Styles long and glutinous."

Sarawak: Kuching (Haviland, 2101).

A pretty plant, allied to *X. rubella*, Pierre, of Cochin China, noticeable for its small round leaves and entire calyx.

Xylopia lanceola, n. sp.

Branches slender; leaves lanceolate or elliptic acuminate obtuse, base rounded, silky pubescent beneath, the midrib on both sides covered with appressed hairs; nerves very inconspicuous, 1.5–5 cm. long, 2 cm. across; petiole 2 mm.

long. Flowers solitary or in pairs, with very short pedicels. Calyx cup-shaped, shortly lobed, 2 mm. long. Outer petals narrow, linear from a broader base, minutely appressed, hairy, 6 mm. long, 1 mm. wide. Stamens linear, with a very small appendage. Pistils few, silky hairy.

Sarawak (Beccari, 1908, 3368).

Very near *X. caudata*, King, but the flowers are much longer and the petals more elongate.

Alphonsea javanica, Scheff., Flora, liii. 242.

Sarawak (Beccari, 2621) : Kuching (Haviland & Hose, 2115).

I only know this from Scheffer's description and a flowerless specimen from Java, but I believe it is the plant intended.

Distrib. Java, Ceran.

Mezzettia parviflora, Becc., l. c. 188, pl. vi. 4-10.

Sarawak (Beccari, 308, 2558, and 2586). On Matang.

Mezzettia Havilandii, n. sp. *M. parviflora* var. *Havilandii*, Boerl.

Leaves coriaceous, glabrous, elliptic, acuminate; nerves eight pairs, thin, inconspicuous on both surfaces, 9-16 cm. long, 3.5-4.5 cm. wide; petiole thick, 5 mm. Flowers "yellow," in tufts on old wood below the leaves; pedicels 1 cm. long, tomentose thinly. Sepals ovate, subacute. Outer petals oblong lanceolate obtuse, nearly 2 mm. long. Inner petals smaller. Stamens few, rounded. Carpel one. Ovules two. Fruit, when dry, about 4 cm. long. Seeds one or two, 3 cm. long and wide.

Sarawak: Kuching (Haviland, 2335).

This has the foliage of *M. parviflora*, Becc., but the petals are short, not linear acuminate. The species is nearest to *M. Herveyana*, but the leaves are different.

It is certain that this is what Boerlage means by his *M. parviflora* var. *Havilandii*, but it seems to me specifically distinct.

Mezzettia umbellata, Becc., l. c. 187.

Sarawak (Beccari, 11,431) : Kuching (Haviland, '907, 2104) ; (Matang, Singhi Road).

Endemic.

Mezzettia pauciflora, n. sp.

Leaves lanceolate, long acuminate, base cuneate coriaceous, pale beneath; nerves six pairs, inarching in loops midrib prominent; reticulations lax, visible on both surfaces, 11–14 cm. long, 3.5–4 cm. wide; petiole 5 mm. Flowers few, on short extra-axillary racemose peduncles, 1 cm. or less. Pedicels “blue,” 5 mm. Sepals ovate, small, green. Petals linear from a broader base, 5 mm. long, “dirty-white,” inner ones smaller. Stamens square truncate, flat-topped. Ovary one-ovuled. Carpel one, cylindric obtuse, 4 cm. long, 2 cm. across, “glaucous.” Seed ellipsoid, 2.5 cm.

Sarawak: Kuching (Haviland, 1952).

Very distinct in its stiff coriaceous, lanceolate, acuminate leaves, few flowers, and olive-shaped fruit. Nearest *M. umbellata*, Becc., but shorter petals, and quite different leaves.

MEZZETTIOPSIS, n. gen.

Tree with the habit of *Mezzettia*. Leaves thinly coriaceous oblong, shortly petioled. Flowers numerous, small from the axils of the leaves in short panicles, hairy. Sepals free, small ovate. Outer petals short, broadly rounded ovate. Inner petals longer, linear, obtuse, rather thick, excavate at the base. Stamens fairly numerous, elliptic, with broad cells, narrowed to a point at the tip. Pistils six or more curved, flask-shaped; style short. Ovule one, basal.

Mezzettiopsis Creaghii, n. sp.

Bark of twigs black. Leaves elliptic, shortly, bluntly cuspidate, base narrowed; nerves six pairs, elevate beneath, anastomosing within the margin, quite glabrous, 12 cm. long, 4 cm. wide; petiole 3 mm. long. Flowers small, in short hairy panicles, 2 cm. long. Bracts ovate, hairy, 1 mm. Sepals very small, ovate, hairy. Outer petals short, broadly rounded ovate, hairy. Inner petals linear, obtuse, thick, rather fleshy, hairy, base excavate over the reproductive organs, 5 mm. long. Stamens about twenty, elliptic, 2-celled, apex narrowed to a point. Carpels six or more, small, hardly longer than the stamens, curved, narrowed at the base, and with a short blunt style. Ovule one, basal.

British North Borneo: Tinkayo (Creagh), in Herb. Kew.

This plant is certainly allied to *Mezzettia*, of which it has the habit. The stamens have the form of those of *Alphonsea*. It differs from every genus known to me in the numerous pistils with solitary ovules, the short broad outer petals, with much longer inner ones, and the form of the stamens.

It was temporarily referred to *Mezzettia* at Kew, but the numerous carpels and the small outer petals distinguish it from that genus.